

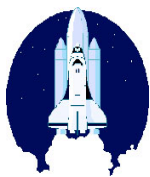


countdown

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Endeavour en route to home at KSC



◆ Shuttle Update:

The takeoff of space shuttle **Endeavour** atop the Shuttle Carrier Aircraft from Edwards Air Force Base in California took place shortly after 10 a.m. Wednesday.

The shuttle/aircraft combo will stay overnight in Ft. Worth, Texas. Endeavour is scheduled to arrive at KSC by the end of the week.

On space shuttle **Discovery**, the following work is in progress: orbiter inspections, aft closeouts, structural leak checks, orbiter final power down and thruster flushing. The crew module close-out is scheduled Dec. 15.

◆ **ISS Update:** NASA and its international partners have assigned the International Space Station's crew members through 2010. The numbering sequence of expeditions was modified to reflect the start of six-person crews. Below are listed new additions to the crews as they replace returning crew members,

- **Expedition 20** begins with the Soyuz 19 docking and the arrival of three new crew members in May 2009: Russian Commander Gennady Padalka, astronauts Michael R. Barratt, Tim Kopra and Nicole Stott, cosmonaut Roman Romanenko, ESA astronaut Frank De Winne and CSA astronaut Robert Thirsk.
- **Expedition 21** includes Cosmonaut Maxim Suraev and astronaut Jeffrey N. Williams.
- **Expedition 22** includes cosmonaut Oleg Kotov, JAXA astronaut Soichi Noguchi and astronaut T.J. Creamer.

- **Expedition 23** includes cosmonauts Alexander Kaleri and Mikhail Kornienko and astronaut Tracy Caldwell.

For more details about space station crew arrivals, departures and dates, go to: <http://www.nasa.gov/centers/kennedy/news/releases/2008/release-20081121.html>.

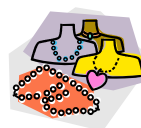
- **NASA Science News** — NASA's Hubble Space Telescope has discovered carbon dioxide in the atmosphere of a planet orbiting another star. This breakthrough is an important step toward finding chemical biotracers of extraterrestrial life.

The Jupiter-sized planet, called HD 189733b, is too hot for life but the Hubble observations are a proof-of-concept demonstration that the basic chemistry for life can be measured on planets orbiting other stars. Organic compounds also can be a by-product of life processes, and their detection on an Earthlike planet someday may provide the first evidence of life beyond our planet.

Previous observations of HD 189733b by Hubble and the Spitzer Space Telescope found water vapor. Earlier this year, Hubble found methane in the planet's atmosphere.

- **KSC America Recycles Day** — The celebration held on Nov. 13 proved to be a great success with more than 500 KSC employees touring the various displays and demonstrations focusing on KSC and home recycling programs and solutions. The home e-waste and rechargeable battery collection efforts also were very successful. The total amount of electronics

collected during KSC's e-waste event was 1,889 pounds!



■ Gift Possibilities —

A Jewelry Fair will be held at the MFF café 7 a.m.–3 p.m. **today** and Friday.

- **Holiday Waste Reduction Tips** — Between Thanksgiving and New Year's Day, an extra 5 million tons of waste are generated nationwide. Here are some opportunities for us to have a **greener** holiday season at parties:



- Avoid disposable napkins, plates and cups, none of which are recyclable.
- Place recycling containers at your party so guests can recycle cans, bottles, etc.
- Prepare only as much food as needed. Send leftover food home with guests in reusable containers.

More than 100 pounds of food per person are wasted each year! If every American throws away one tablespoon of mashed potatoes, **16 million pounds** of food waste is generated!

Countdown is published every Tuesday & Thursday for NASA KSC employees. Deadlines are 9 a.m. Mondays & Wednesdays. E-mail news to anita.l.barrett@nasa.gov. For questions or information, e-mail or call 867-2815. You can also find PDF editions of *Countdown* on the Web at: http://www.nasa.gov/centers/kennedy/news/countdown/countdown_toc.html.